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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/814,255      | 03/21/2001  | Shunpei Yamazaki     | 07977-107002        | 5578             |

7590 01/30/2002

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EXAMINER

NADAV, ORI

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2811

DATE MAILED: 01/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |  |                     |  |
|------------------------------|------------------------|--|---------------------|--|
| <b>Office Action Summary</b> | <b>Application N .</b> |  | <b>Applicant(s)</b> |  |
|                              | 09/814,255             |  | YAMAZAKI ET AL.     |  |
|                              | <b>Examiner</b>        |  | <b>Art Unit</b>     |  |
|                              | ori nadav              |  | 2811                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 March 2001 .
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 21 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 6) <input type="checkbox"/> Other: _____ .                                   |

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## **DETAILED ACTION**

### ***Oath/Declaration***

1. The oath/declaration filed on 03/21/2001 is acceptable.

### ***Drawings***

2. The formal drawings filed on 03/21/2001 are acceptable.

### ***Priority***

3. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 08/769,371, filed on 12/19/1996.

### ***Information Disclosure Statement***

4. The Information Disclosure Statement filed on 03/21/2001 has been considered.

### ***Specification***

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

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***Claim Objections***

6. Claim 15 is objected to because of the following informalities: The claimed limitation of flowable at 450°C, as recited in claim 15, is unclear as to what is it meant.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. *The following is a quotation of the first paragraph of 35 U.S.C. 112:*

*The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.*

8. Claims 1-14 and 20-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support in the text of the specification for an element which belongs to groups 12 to 15 existing at a higher concentration at a boundary than in other regions, as recited in claims 1, 5, 9, 12, 20 and 24, in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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9. Claims 1-14 and 20-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. There is no support in the text of the specification for an element which belongs to groups 12 to 15 existing at a higher concentration at a boundary than in other regions, as recited in claims 1, 5, 9, 12, 20 and 24, in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 9-10, 12-13 and 15-18, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugano (5,283,206).

Regarding claims 9 and 12, Sugano teaches in figure 4 an interlayer insulating film 12 formed over a substrate 11, a contact hole formed through the interlayer insulating film; and two conductive films 14, 18 comprising aluminum being in contact with each other,

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and an element 17 which belongs to groups 12 to 15 is one or a plurality of elements selected from the group consisting of germanium, tin, gallium, zinc, indium, and antimony and existing at a boundary between the semiconductor region and the wiring and/or a vicinity thereof at a high concentration.

Sugano does not teach an element at a boundary having a higher concentration than in other regions. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an element at a boundary having a higher concentration than in other regions in Sugano's device in order to improve the contact resistance between the two conductive films.

Regarding claims 15 and 18, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use germanium at 20-40 atomic%, such that the electrode is flowable at 450 c or less in Sugano's device in order to improve the contact resistance between the two conductive films.

12. Claims 1-8, 11, 14 and 19-27, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugano (5,283,206) in view of Admitted Prior Art (APA).

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Regarding claims 1 and 5, Sugano teaches substantially the entire claimed structure, as applied to claim 9 above, except an insulating film formed on the conductive layer, wherein the wiring is in contact with the conductive layer in the contact hole.

APA teaches in figure 1 an insulating film formed on the conductive layer, wherein the wiring is in contact with the conductive layer in the contact hole.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the insulating film on a conductive layer, wherein the wiring is in contact with the conductive layer in the contact hole in Sugano's device in order to use the device in an application which requires the wiring layer to be connected to the gate of the device.

Regarding claims 4, 8, 11, 14, 19, 20, 23, 24 and 27, APA teaches at least one thin film transistor being an active matrix type EL display device formed over a substrate and comprising at least a semiconductor region, a gate electrode, a gate insulating film interposed therebetween; and an interlayer insulating film formed over the thin film transistor.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References B-C and N are cited as being related to wiring comprising Al/Ge.

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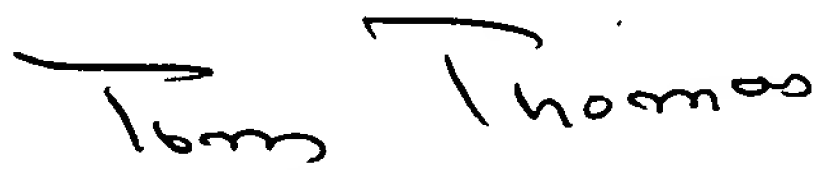
**Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.**

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 3 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

Ori Nadav

January 24, 2002

  
**TOM THOMAS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800**